

Characterization of cirrus clouds in central Amazon (2.89° S 59.97° W): Firsts results from six months of observations in 2011

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Abstract:

In mid-2011 a UV Raman-Lidar station become operational in the central Amazon region. The instrument is installed 30 km up-wind from Manaus-AM and remotely senses the troposphere using a 95 mJ Nd-Yag laser at 355 nm. Receiving optics consists of a cassegrain telescope with 400 mm and 4000 mm focal length. During the first year of operation, a narrow field of view was used to allow a reasonable signal to noise ratio near the tropopause. This study focuses on the characterization of tropical cirrus clouds observed during the first six months of operation (July to December 2011). A cloud detection algorithm [citar paper boris] was adapted for this system and used to determine the cloud base and top heights, and cloud thickness. The slope method was used to derive the cirrus optical depth for those observations where the molecular signal above the cloud could be measured. The occurrence of cirrus clouds is about 40% of the total observation time, and these are located between 12 and 15km height typically. These cirrus are less frequent and more restricted in height those derived by Sassen et al (2009) from Calipso data. We also found that around 34% of all cirrus were subvisual cirrus ($\tau < 0.03$), 62% were thin cirrus ($0.03 < \tau < 0.3$) and only 4% were cirrus stratus ($\tau > 0.3$).

References

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